

Course Outline

COURSE: CSIS 49 **DIVISION:** 50 **ALSO LISTED AS:**

TERM EFFECTIVE: Fall 2016 **CURRICULUM APPROVAL DATE:** 11/23/2015

SHORT TITLE: UNIX SHELL PROGRAM

LONG TITLE: UNIX/Linux Shell Programming

<u>Units</u>	<u>Number of Weeks</u>	<u>Type</u>	<u>Contact Hours/Week</u>	<u>Total Contact Hours</u>
4	18	Lecture:	3	54
		Lab:	3	54
		Other:	0	0
		Total:	6	108

COURSE DESCRIPTION:

A beginning course in UNIX/Linux shell programming using different commands including awk, sed, and Perl. The course will cover theory and concepts including interpretation of different quote characters, shell variables, decision-making commands, and looping mechanism. This course has the option of a letter grade or pass/no pass. **ADVISORY:** CSIS 48

PREREQUISITES:

COREQUISITES:

CREDIT STATUS: D - Credit - Degree Applicable

GRADING MODES

L - Standard Letter Grade

P - Pass/No Pass

REPEATABILITY: N - Course may not be repeated

SCHEDULE TYPES:

02 - Lecture and/or discussion

03 - Lecture/Laboratory

04 - Laboratory/Studio/Activity

05 - Hybrid

72 - Dist. Ed Internet Delayed

STUDENT LEARNING OUTCOMES:

1. Write programs in sed, awk, and Perl.
Measure: Homework, projects, lab exercises.
PLO: 1
ILO: 7,3,2
GE-LO:
Year assessed or anticipated year of assessment: 2016

2. Identify and use pattern matching in shell scripts.
Measure: Homework, projects, lab exercises.
PLO: 1, 2
ILO: 3,7,2
GE-LO:
Year assessed or anticipated year of assessment: 2016

3. Write shell scripts that use selection and loops..
Measure: Homework, projects, lab exercises.
PLO: 2, 3
ILO: 7
GE-LO:
Year assessed or anticipated year of assessment: 2016

PROGRAM LEARNING OUTCOMES:

- 1) Students will use UNIX editors to create and modify files.
- 2) Students will modify, move, and rename files and directories.
- 3) Students will use UNIX email and file transfer commands.

CONTENT, STUDENT PERFORMANCE OBJECTIVES, OUT-OF-CLASS ASSIGNMENTS

Curriculum Approval Date: 11/23/2015

WEEK HOURS CONTENT

1-2 6 LEC Introduction to shell programming
Why use the shell? The different UNIX shells:
Bourne, C-shell, Korn, Bash.
History, advantages, disadvantages of different shells. UNIX review. Shell fundamentals.
Command syntax. Metacharacters and filename generation. Regular expression. Filters, input/output redirection, and pipes.

6 LAB Do homework at end of each chapter covered.
The students read about the different shells, and their history. The students use the different shells.
The students use UNIX commands and the system.
The students use metacharacter & filename generation.

3-4 6 LEC Shell commands. File and directory commands.
Selection commands. Combining and ordering commands.
Transformers and translators. Built-in commands.
Shell variables. Types of quotes and their uses.

6 LAB Do homework at end of each chapter covered.
Use file and directory commands. Use file selection

commands. Combine and order commands in various ways.
Use regular and built-in commands. Use shell variables and quotes in statements.

5-6 6 LEC The test, expr commands. Sequential control structures. Looping commands. Shell programming. Interactive shell history. Foreground and background processes. Creating shell programs.

6 LAB Do homework at end of each chapter covered. Use test and expr commands in statements. Use sequential and non-sequential control structures. Use looping commands. Use interactive commands and foreground/background commands.

7-8 6 LEC If-then-else constructs. Tests, exit and elseif. The case statement for loops and continue statements. While and until statements.

6 LAB Do homework at end of each chapter covered. Use if-then-else statements in shell scripts. Use conditional statements in elseif statements. Use for, foreach, until and while loops.

9-10 6 LEC Structuring shell programming. Shell functions. Designing reusable functions. Recursive functions.

6 LAB Do homework at end of each chapter covered. Write programs that are reusable. Write shell programs that use functions. Write recursive shell functions.

11-12 6 LEC Using sed. The relationship of sed to editors, awk, and other tools. How sed works and how sed differs from editors. Sed command syntax. Using set at command line and in scripts.

6 LAB Do homework at end of each chapter covered. Write command-line sed commands. Write sed scripts that use command files. Write sed scripts that use many of the sed commands.

13-14 6 LEC Using awk. History and relationship of awk to other tools. Using awk at command line and in scripts. Awk variables and awk operations. Using BEGIN and END. Variables and pattern matching. Loops and decision statements. Using print and default print. Passing variables on command line.

6 LAB Do homework at end of each chapter covered. Write command-line awk statements and awk shell scripts. Write awk programs using decision statements, blocks and loops. Write awk programs that pass command-line variables to the program.

15-16 6 LEC Korn, Bourne, and C-shell differences/similarities. Special files for Korn, Bourne, and C-shell. Advantages of the Korn shell. Variables and arithmetic. Decisions and loops. Using arrays.

6 LAB Do homework at end of each chapter covered.

Use and distinguish the syntax for different shells.

Use arrays in shell scripts.

17-18 6 Lec Using Perl. Relation of Perl to grep, sed, and awk.

Why use Perl. Perl variables and perl operations.

Perl statements and blocks. Variables and pattern

matching. Loops and decision statements.

6 LAB Do homework at end of each chapter covered.

Write some simple Perl programs. Write Perl programs

using blocks and condition statements. Write Perl

programs using loops and decision statements.

FINAL EXAM

STUDENT PERFORMANCE OBJECTIVES:

Weeks 1-2

The students learn how to identify and use the different shells.

The students understand the use and advantages/disadvantages of each shell.

The students review UNIX commands and become familiar with the system.

The students understand meta-character and filename generation.

The students are able to use simple and complex filters, pipes, and I/O redirection.

Weeks 3-4

The students use and master file/directory commands.

The students construct commands using several methods.

The students use and distinguish build-in and regular commands.

The students write statements and use shell variables.

The students use the four quoting methods in shell statements.

Weeks 5-6

The students use test and expr statements to construct non-sequential statements.

The students use looping to construct statements.

The students use foreground and background commands, with other related commands.

Weeks 7-8

The students use conditional tests and statements.

The students uses for, foreach, until, and while loops.

Weeks 9-10

The students write programs that can be reused.

The students write shell programs that use functions.

The students write shell programs that use recursive functions.

Weeks 11-12

The students write command-line sed commands.

The students write sed scripts that use command files.

The students write sed commands that use many sed commands.

Weeks 13-14

The students write intermediate level awk programs.

The students write awk programs that use decisions statements and

loops.

Weeks 15-16

The students use variables and statements in different shells.

The students use decisions and loops in different shells.

The students use arrays.

Weeks 17-18

The students write simple and complex Perl programs.

METHODS OF INSTRUCTION:

Lecture, demonstration, book assignments, and reading.

METHODS OF EVALUATION:

The types of writing assignments required:

Written homework

Reading reports

Lab reports

The problem-solving assignments required:

Homework problems

Quizzes

Exams

The types of skill demonstrations required:

Class performance

Performance exams

The types of objective examinations used in the course:

Multiple choice

True/false

Matching items

Completion

Other category:

None

The basis for assigning students grades in the course:

Writing assignments: 10% - 40%

Problem-solving demonstrations: 30% - 50%

Skill demonstrations: 10% - 50%

Objective examinations: 10% - 20%

Other methods of evaluation: 0% - 0%

REPRESENTATIVE TEXTBOOKS:

Required:

Blum and Bresnahan. Linux Command Line and Shell Scripting Bible. Publisher: Prentice Hall, 2015. Or other appropriate college level text.

Reading level of text, Grade: 12+ Verified by: ev

Other textbooks or materials to be purchased by the student: none

ARTICULATION and CERTIFICATE INFORMATION

Associate Degree:

CSU GE:

IGETC:

CSU TRANSFER:

Transferable CSU, effective 200630

UC TRANSFER:

Transferable UC, effective 200630

SUPPLEMENTAL DATA:

Basic Skills: N

Classification: Y

Noncredit Category: Y

Cooperative Education:

Program Status: 1 Program Applicable

Special Class Status: N

CAN:

CAN Sequence:

CSU Crosswalk Course Department: CSIS

CSU Crosswalk Course Number: 49

Prior to College Level: Y

Non Credit Enhanced Funding: N

Funding Agency Code: Y

In-Service: N

Occupational Course: D

Maximum Hours:

Minimum Hours:

Course Control Number: CCC000033132

Sports/Physical Education Course: N

Taxonomy of Program: 070710